

me inclined to regard *Myrm. sabuleti* as just as good a species as *Myrm. scabrinodis*." With this I entirely agree.

As to *Acanthomyops* and *Lasius*, I still agree with the validity of the Erlangen List, and I do not propose to accept the name *Lasius*, F. This is, of course, a matter of opinion; and I am also aware that the International Commission on Zoological Nomenclature has decided otherwise. In view of the fact that Nomenclature still seems very slow in becoming stable, and that anyone who wants to get a name conserved appears able to do so without difficulty, I feel unable to come into line with a decision which wipes out for reasons outside Nomenclatural ones many names which are valid, acceptable, and contribute much to the stability of the Nomenclature of the Hymenoptera. These I know to be the views held by Mr Tams. I also agree with Mr Bainbrigge Fletcher when he says he declines to admit the right of Zoologists to regulate Names in Entomology.

Coming to the genus *Formica*, *F. glebaria*, Nyl., is not, of course, a synonym of *F. fusca*, L. Indeed, Emery regarded it as a subspecies, and not a variety, of *fusca*.

F. picea, Nyl., as I have pointed out before, should really be called *F. transkaukasica*, Nasonow. When I criticized the List of the British *Formicidae* published by the R. Ent. Soc. London, I unfortunately did not ask for any reprints of my paper in question. This I propose to have reprinted, and to include it with this paper, for many of the points referred to are treated at greater length, and it will thus save republishing the same matter. I must thank Mr W. H. T. Tams for kind advice on this paper. I now append a List of the British *Formicidae*; as in my judgment it should appear.

LITERATURE REFERRED TO.

- Donisthorpe, H. St. J. K. *British Ants*, 2nd Edtn., London (1927)
- "Generic Names, etc., of the British *Formicidae*," *Ent. Record.*, **49**, 131-31; 143-45 (1937).
- "A List of the Type-Species of the Genera and Subgenera of the *Formicidae*," *Ann. Mag. Nat. Hist.* (S.11), **10**, 617-737 (1943).
- Holgersen, Holger. "*Ponera punctatissima*, Rog. (Hym., Form.) funnet i Norge," *Norsk. Entom. Tidsskr.*, **6**, 183-86 (1943).
- "The Ants of Norway," *Magas. f. Naturvidens.*, **84**, 165-203 (1944).
- Kloet, G. S., and Hincks, W. D. *A Check List of British Insects* (1945).
- Santschi, F. "Notes sur le genre *Myrmica* (Latreille)," *Rev. Suisse Zool.*, **38**, 339 (1931).

(To be concluded.)

THE OCCURRENCE OF THREE MERMITHOGYNES AT ROUNDSTONE, CONNEMARA, WITH NOTES ON THE ANTS OF THE AREA.

By FERGUS J. O'ROURKE, B.Sc., F.R.E.S.

Mermithogynes are brachypterous female ants whose condition is due to the fact that they harbour in their bodies endoparasitic nematode worms of the genus *Mermis*. So far as is known the species is, in all the cases occurring in Europe, *Mermis myrmecophila*, Baylis, which was described by Baylis (1) in 1921 from specimens emerging from *Acanthomyops* (*Donisthorpea*) *niger*, L. The following specimens were

taken by me in Roundstone, Co. Galway, and they appear to be the first records of the occurrence of these forms in Ireland.

Acanthomyops (Donisthorpea) niger, L.

This specimen (R_3) was found in a nest under a stone in damp peaty soil containing normal males, females and workers on 22nd July 1944.

The wings are approximately 56% of the length of those of a normal female taken from the same nest. They show the typical pattern of veins. The veins are, however, denser than normal and since they are almost normal in width they occupy a relatively greater area of the wing than in the normal form.

The enlargement of the abdomen characteristic of mermithogynes is noticeable in the length of the first four dorsal gastric tergites (which together make up by far the greater part of the length of the gaster), which is 16% longer than in the normal littermate taken for comparison in which the length was 3.7 mm.

For further measurements see Table I.

TABLE I.

Specimen.	Length of Forewing. †	Length of Hindwing. †	Wing Spread.	Width of Gaster. ††
Norman Littermate	9.55 mm.	6.50 mm.	20.8 mm.	2.90 mm.
Mermithogyne, R_z .	5.50 mm.	3.5 mm.	12.5 mm.	3.100 mm.

† Measured as the maximum length from the proximal end of the wing to the nearest 0.05 mm.

†† Measured as the width of the posterior border of the 2nd gastric tergite—a convenient point at which to take a measurement and also frequently the point of maximum width.

Acanthomyops (Chthonolasius) flavus, F.

Specimen R₁—taken 15th July 1944 from a nest in damp peaty soil 300 yards further North along the same lane in which the previous specimen was taken. (The spot can be found on the 6 inch Ordnance Survey Map, Galway, Sheet 50:52 cms. West; 5 cms. North.) There were other normal winged forms in the nest.

In this specimen the wings are a little more than 50% of the normal length but preserve their normal symmetry both with respect to their venation and the ratio between the lengths of fore and hindwings, which retains its normal ratio of roughly 3:2. The veins are ochreous instead of the usual pale yellow and considerably denser in the proximal half of the wing. The pterostigma is very dark indeed. The entire wing is infusate whereas it is normally hyaline in its distal half. The gaster is 25% broader than usual.

For other measurements see Table II.

Specimen R₂—from a nest in peaty soil, 15th July 1944, on the North side of the road near Creggduff Bridge Roundstone. There were not any other winged forms in this nest.

In this mermithogyne the gaster is smaller than that of a normal female. The wings are 60% of the usual length and, as in the previous specimen, entirely infusate. The venation, although darker than usual, is normal in width and pattern and the wings as a whole preserve their symmetry.

See Table II for measurements.

TABLE II.

Specimen.	Length of Forewing.	Length of Hindwing.	Wing Spread.	Width of Gaster.
Mermithogyne R ₂	5.25 mm.	3.40 mm.	12.00 mm.	2.30 mm.
Mermithogyne R ₁	4.60 mm.	2.95 mm.	10.30 mm.	3.10 mm.
Normal Litter-	8.45 mm.	5.75 mm.	18.05 mm.	2.50 mm.
mates of R ₁	9.00 mm.	5.70 mm.	18.90 mm.	2.40 mm.

No further parasitised forms were found in the locality either in 1944 or when the area was revisited in the last fortnight of July 1945.

Some notes are added on the ants of the district, all of which have been found within a radius of 3 miles of Roundstone village.

Acanthomyops (Donisthorpea) niger, L.

The commonest Formicine ant of the area, its nests being nearly twice as frequent as those of *A. flavus*. Winged forms were present in all nests by 19th August 1942 but swarming did not take place until the late afternoon of 23rd August, on which date the sea in Roundstone Bay was covered with winged ants, mainly *A. flavus*, but also *A. niger* and a few male *Myrmicas*. I came up the bay from Innislacken in a curragh about 6.30 p.m. (Irish Summer Time) and counted up to 50 per square foot and never less than 3 or 4. If we take an average of 100 to the square yard the number of ants lost on the water numbered some 500 millions, for the area involved (measured on the 6 inch map) was not less than 5 million square yards. This gives one a remarkable impression of the numbers of ants involved in a swarm. No doubt the number must run into billions where, as usually happens, thousands of acres are involved. Although no fish were observed taking the ants, no doubt they did, for Wheeler records fossil fish excrement from the tertiary lake at Florissant which consisted "almost entirely of the hard indigestible heads of ants" (8: p. 164).

In 1944, although winged forms were found in some nests on 15th July, and in nearly all nests a day or two later, swarming had not occurred by 30th July. In 1945 swarming may have occurred before 17th July for there were no winged forms in the nests on that date nor did any appear within the next ten days.

At Ellistrin on 22nd July 1944 foraging workers were taken 13 feet 8 inches from the nest—giving a feeding territory of about 60 square yards (using the formula $3.14 r^2$ where n is the maximum foraging distance), an area which is greater than that obtained by Pickles at Garforth, Yorkshire, where the area was 35 square yards (6).

17th July was a gala day for this species at Creggduff, where hundreds of workers could be seen out capturing the swarming *Myrmicas* (q.v.). A colony of this species was found living in plesiobiosis with a colony of *A. flavus*, 27th July 1945.

Acanthomyops (Donisthorpea) alienus, Först.

A worker of this uncommon species was taken on the island of Innislacken in Roundstone bay on 23rd August 1942. This is an interesting record as the species has hitherto been recorded in Ireland only from West Cork, Clare, Dublin, Wicklow and West Mayo.

Acanthomyops (Chthonolasius) flavus, F.

Winged forms were to be found in the nests on 14th July 1944, though swarming had not occurred by 30th July. On 15th July at Errisbeg it was very noticeable that some nests contained only males and no winged females, while the reverse occurred in other nests. The same situation was observed in 1945, about 20% of the nests having males only, the other 80% having mainly winged females. As these nests were not dug out it is possible, although unlikely, that their appearance was deceptive. I have already noted (3) the same phenomenon at Howth, Co. Dublin. W. M. Wheeler (8: p. 183) also comments on the fact and makes the likely suggestion that it facilitates cross fertilization.

In 1945 winged forms were to be found in nests by 17th July, although swarming had not occurred by 30th July, and they were negatively phototropic on 27th July. On 27th July naked pupae were found in two nests.

Formica fusca, L.

This species, which is quite common in the South and East of Ireland, tends to become much less common as one goes north-westward. In three separate visits to the Roundstone area I have seen less than a dozen colonies and only on one occasion, 27th July 1945, did I see winged forms and then only females.

Leptothorax (Mychothorax) acervorum, F.

The only winged form seen was a flying female taken at Ballyrobick on 17th July 1944. As the numbers of this species are so small this may be considered a swarming date, especially as the other Myrmicinae swarmed on the same day. Workers have been taken running with those of *Myrmica scabrinodis* at Creggduff on 17th July 1944 and with those of *M. schenki* on 27th July 1945. *Leptothorax* was frequently found foraging on bare rock, the site of the nest being very difficult to find.

Myrmica laevinodis, Nyl.

A small swarm numbering some hundreds took place on 16th July 1944 followed on the next evening at 8 p.m. (Irish Summer Time) by a widespread swarm at Creggduff in which *M. ruginodis* and *M. scabrinodis* also took part. Several counts showed that males comprised 90% of the swarm. The average density along a mile and a half of the road was not less than 100 per square yard and the area involved included fields on either side of the road. How extensive the area involved was not determined but the number along the mile and a half of the road alone would be more than two and a half million ants or approximately half a million per acre. If we assume that every nest produces 500 winged forms—probably a rather high figure—we can derive the number of nests per acre as 1000 and assuming an average worker population of 1000 per nest, a figure which is not unreasonable, cf. Pickles' figures for Thornhill, Yorkshire (7), we get one million ants per acre as the lowest density of Myrmicine ants. The lowest density is the number of ants per acre in a large area and, as Pickles (*loc. cit.*) points out, gives some measure of the biological success of the group over a large tract of country. If we allow a similar figure for the Formi-

cine species—a not unreasonable assumption in view of the figures already given above under *A. niger*—we arrive at the figure of two million ants per acre. This seems enormous but agrees remarkably with the figure 2,946,125 ants per acre derived by Morris (2) in 1922 for land dressed annually with farmyard manure at Rothamstead. Pickles gives what are probably more accurate figures for a smaller area at Garforth, Yorks, 1935. *A. niger*, *M. scabrinodis* and *F. fusca* give a lowest density figure of 60,388 per acre between them (6).

On 22nd July 1944 no winged forms were to be found in nests.

Swarming had not occurred by 30th July 1945 and on 27th July the sexes to be found in the nest were negatively phototropic.

Myrmica rubra, L.

On 17th July 1944 this species took part in the swarming referred to under *M. laevinodis* and which was the object of the attacks of *A. niger* already referred to; by 22nd July no winged forms remained in the nests. While winged forms occurred in nests on 17th July, swarming had not occurred by 30th July 1945.

Myrmica laevinodis, Nyl., var. *ruginodo-laevinodis*, Forel.

I have already recorded the occurrence of this form at Recess, West Galway, where Mr P. A. Heelan obtained specimens for me (4). This form occurs at Roundstone under two different aspects—one has a *laevinodis* facies but with long epinotal spines; the other has short weak spines but otherwise the *ruginodis* facies.

Myrmica scabrinodis, Nyl.

A single flying female was taken at Errisbeg on 22nd July 1942 and the following evening at 5 p.m. (Irish Summer Time) the species swarmed in some numbers (thousands) on the island of Innislacken. It will be noted that this was the date of the large Formicine swarm referred to above. In 1944 the species swarmed on 17th July with the other *Myrmicas* but on 22nd July some nests still had winged forms. On 27th July 1945 three nests were found in wet marshy ground and all had very dark melanic workers of which three-quarters were micergates. Three of the nests contained winged forms; one had, however, only a single male.

Myrmica sabuleti, Meinert.

About one-third of the *scabrinodis* colonies were of this variety; winged forms occurred in nests on 17th July 1945.

Myrmica schenki, Emery.

I have already recorded this rare ant from Roundstone (5). In 1945 it was found to be distributed widely though scarcely around the area.

REFERENCES.

- (1) Baylis, H. A. D., and Crawley, W. C. "Mermis parasitic on Ants of the genus *Lastus*." *Journ. R. Micros. Soc.* (1921), 353-372.
- (2) Morris, H. M. "The Insect and other Invertebrate Fauna of the Arable Land at Rothamstead." *Ann. Appl. Biol.* (1921), 9, 282.
- (3) O'Rourke, F. J. "Dates for Swarming Ants, 1939." *Ir. Natural. Journ.* (1940), 7, 249.

- (4) — "Notes on the Ant Fauna of Howth." *Ir. Natural. Journ.* (1940), **7**, 303.
- (5) — "An Extension of the Range of *Myrmica schenki*, Emery. *Ent. Rec.* (1945), **57**, 85-86.
- (6) Pickles, W. "Populations, Territory and Inter-Relations of the Ants, *Formica fusca*, *Acanthomyops niger* and *Myrmica scabrinodis* at Garforth (Yorkshire)." *Journ. Anim. Ecol.* (1935), **4**, 22-31.
- (7) — "Populations and Territories of the Ants *Formica fusca*, *Acanthomyops flavus* and *Myrmica ruginodis* at Thornhill (Yorks.). *Journ. Anim. Ecol.* (1936), **5**, 262-270.
- (8) Wheeler, W. M. "Ants, their Structure, Development and Behaviour." *Columbia Univ. Press* (1910).

MELICTA (MELITAEA) ATHALIA R. PARVANIGRA, VERITY.

By B. J. LEMPKE.

In his monograph on *M. athalia*, Rott. (1940, *Trans. R. Ent. Soc. London*, **89**), Verity described a new race, *parvanigra* (l.c., p. 644), and figured it on pl. 5, fig. 108 (♂) and 109 (♀). This race, distinguished from the typonominal one from Paris by its smaller size and darker upper side, was only known by Verity from one locality, viz., Bijvank in Holland.

The Bijvank is a rather small, but very fine old wood and lies on the frontier of the Dutch province of Gelderland and Germany, north-west of the German town of Emmerich (on the Rhine). It contains a great variety of bushes, trees and low plants. No wonder that the lepidopterological fauna is very rich. L. H. Scholten gave an extensive list of the Macrolepidoptera which he met with in this wood and the neighbouring hills in *Tijdschr. voor Ent.*, **81**, 127-229, 1930. More than half the total number of the Dutch Macros are to be found there.

It is, of course, not to be expected that the special *athalia* race would only be found in this very restricted area. I therefore compared the material of several Dutch collections with Verity's description and figures and then it became clear, that everywhere in our country, where *athalia* is met with, it belongs to race *parvanigra*, Vty. A peculiarity of this race is its extremely small variability. There are some specimens in which the black pattern is not so extensive as in the examples figured, but they are exceptions. The great majority of the Dutch race excellently answers to Verity's description and to his figures. It flies in woody localities in the whole east and south of the country. I saw a very typical ♀ from Epen, a small village in the extreme south-east of Dutch Limburg (west of the German town Aix-la-Chapelle).

It is, therefore, evident, that the race also inhabits the part of Western Germany which touches our country, and Belgium, at any rate the greater part of the latter country. The more southward one goes, the greater the chance that transitions to typonominal *athalia* are met with. It remains to be investigated if this happens in the south of Belgium or in the north of France, but the uniformity of the Dutch race is an indication that the habitat of *athalia*, r. *parvanigra*, extends to a rather greater distance and beyond our frontiers. Oude Yselstraat 12 III, Amsterdam, Z.